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COMMAND, CONTROL, AND COMMUNICATIONS
LESSONS LEARNED IN DIVISION COMMAND

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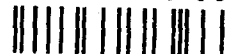
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92-14478



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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED			1b. RESTRICTIVE MARKINGS		
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release. Distribution is unlimited.		
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE			5. MONITORING ORGANIZATION REPORT NUMBER(S)		
4. PERFORMING ORGANIZATION REPORT NUMBER(S)			7a. NAME OF MONITORING ORGANIZATION		
6a. NAME OF PERFORMING ORGANIZATION U.S. Army War College		6b. OFFICE SYMBOL (If applicable) AWCA	7b. ADDRESS (City, State, and ZIP Code)		
6c. ADDRESS (City, State, and ZIP Code) Carlisle Barracks Carlisle, PA 17013			9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER		
8a. NAME OF FUNDING/SPONSORING ORGANIZATION		8b. OFFICE SYMBOL (If applicable)	10. SOURCE OF FUNDING NUMBERS		
8c. ADDRESS (City, State, and ZIP Code)			PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO.
			WORK UNIT ACCESSION NO.		
11. TITLE (Include Security Classification) Command, Control, and Communications Lessons Learned in Division Command					
12. PERSONAL AUTHOR(S) MUNDIE, William L., Jr., LTC, USA					
13a. TYPE OF REPORT Study Project		13b. TIME COVERED FROM _____ TO _____		14. DATE OF REPORT (Year, Month, Day) 92/04/06	
15. PAGE COUNT 22					
16. SUPPLEMENTARY NOTATION					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUB-GROUP			
19. ABSTRACT (Continue on reverse if necessary and identify by block number) This study project is a review of command, control, and communications lessons learned at the division level from 1985 to 1991. The lessons were taken from Division Command Lessons Learned Program pamphlets for designated Division Commanders called Experiences in Division Command and other related division-level command, control, and communications lessons literature. Lessons about division command, control, and communications are identified and recommendations for corrective action are made.					
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED		
22a. NAME OF RESPONSIBLE INDIVIDUAL Dr. J. W. Williams			22b. TELEPHONE (Include Area Code) 717-245-4427		22c. OFFICE SYMBOL USAMHI

USAWC MILITARY STUDIES PROGRAM PAPER

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**COMMAND, CONTROL, AND COMMUNICATIONS
LESSONS LEARNED IN DIVISION COMMAND**

AN INDIVIDUAL STUDY PROJECT

by

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AUTHOR: William L. Mundie, Jr, LTC, US Army
TITLE: Command, Control, and Communications Lessons Learned
in Division Command
FORMAT: Individual Study Project
DATE: 6 April 1992 **PAGES:** 19 **CLASSIFICATION:** Unclas

This study project is a review of command, control, and communications lessons learned at the division-level from 1985 to 1991. The lessons were taken from Division Command Lessons Learned Program pamphlets for designated Division Commanders called Experiences in Division Command and other related division-level command, control, and communications lessons literature. Lessons about division command, control, and communications are identified and recommendations for corrective action are made.

INTRODUCTION

General

Command, control, and communications (C3) are the powerful processes that allow a commander to lead and manage his unit in combat. The five points of the Combined Arms Combat Development Activity's (CACDA) Sigma Star define the major elements of a unit's combat power as maneuver, fire support, intelligence, air defense, and logistics. The commander directs the effects of those elements by command, control, and his ability to communicate his desires through communications networks.

Command and control of an operation begins with the commander specifying his intent. The commander's intent is the concise outline of the operation and it provides the unit's focus. The concept of the operation, a major part of the written operations plan, adds the details to the framework established by the intent by describing the forces to be used, fires, control measures, and support requirements. The commander's intent and the concept of the operation are the keys to command and control at Corps level and below.

Communications, ideally, are transparent. The focus should be on the message and not on the means used to send or receive it. War, unfortunately, wrecks havoc with transparency. Communications means can be attacked directly, suppressed with fires, effected by electronic warfare (EW) and electromagnetic pulses (EMP), and displaced by rapid movement of the supported

unit. These problems can also be compounded by having to make tough choices between secure and somewhat inflexible communications and nonsecure, vulnerable to intercept, but more flexible networks. With limited communications equipment assets, choices must also be made between redundancy of communications networks to improve the chances that the message will get through or spreading your assets to ensure a greater volume of traffic horizontally and vertically within the unit.

The sum total of C3 processes provide the commander and his unit with tactical warning of the enemy's presence, an assessment of the situation and probable enemy courses of action, and directed friendly actions to be taken to stop the enemy and allow the commander to keep the initiative. Once the commander has decided on the course of action to be taken, C3 ensures that the commander's intent is carried out in the scheme of maneuver, the necessary fire support is provided, intelligence assets are aligned to measure success, air defense assets are utilized to good effect, and that logistics are available to provide the necessary munitions, repair parts and fuel to accomplish the mission.

Purpose

The purpose of this paper is to identify command, control, and communications lessons and make recommendations for some corrective action. The recommendations will focus mainly on communications because transparency of communications means is the weakest aspect of effective, efficient C3.

Methodology

Most of the lessons learned were extracted from the Division Command Lessons Learned Program in published pamphlets for designated Division Commanders called Experiences in Division Command. Other publications, such as the National Training Center's (NTC) Lessons Learned and the Military Review were used to illuminate related problems. Nearly all the recommendations have been made before, in many sources, but are restated here to make this paper more comprehensive.

DIVISION COMMAND EXPERIENCES AND LESSONS LEARNED

It is readily apparent, from interviews conducted by the Division Command Lessons Learned Program with division commanders who have successfully completed their command tours, that there are serious problems with C3 -- and especially communications -- within the Army's divisions. From studying the Experiences in Division Command pamphlets produced each year, it is obvious that division commanders are finding more problems and limitations to their ability to command and control their organizations the more the division exercises their C3 systems. Preparation for NTC and actual NTC experience have caused division commanders to reevaluate how they command, control, and communicate on the modern battlefield using AirLand Battle doctrine. The lessons from Desert Storm will likely confirm these observations.

In the mid-1980's, when the NTC was just beginning to test and stress larger units, it was noticeable in the division commanders' comments that they had no idea how bad their division's C3 systems had become. The added traffic loading and transmission distances at the NTC really illuminated the problems. Comments about how old and tenuous their tactical FM radios and weak their command post (CP) and tactical operations centers (TOC) procedures had become led to lessons learned about which nets to secure (commander-to-commander and the operations/intelligence) and who should be on them (command on FM

radios and staff on the division multi-channel links).¹ They also mentioned a desire for more intelligence monitoring and for a critique of the communications nets so they could make change operational procedures to increase efficiency and reduce security problems.²

In 1987 and 1988, the chief comments from division commanders were about exercising CPs, TOCs and the C2 communications networks in the field, and about stressing the networks at realistic battlefield distances under battlefield traffic-loading conditions.³ CP movement, efficient set-up, and effective field staff interactions had to be practiced constantly in order to maintain efficiency and to keep from having to relearn old lessons.⁴ One division commander even stressed having the supporting Corps communications network nodes play in division exercises to increase loading and to ensure that those assets were not forgotten in movement and displacement planning and training.⁵

In 1989 and 1990, there were even more comments about communications deficiencies and the limitations they imposed on field operations. The AN/VRC-12 family of radios were not able to perform at AirLand Battle doctrine's pace and distances.⁶ The Army of Excellence (AOE) initiatives had stripped the division support command (DISCOM) of their ability to communicate effectively within the DISCOM and had removed any ability to add redundancy to the division's critical C3 nets.⁷ Also mentioned was the inability to effectively pass a voice message over the

secure C2 FM net and feel confident that all stations received the transmission. This caused concern over the ability to share a common view of the battlefield quickly. It also raised the likelihood of increased EW vulnerability if the same message had to be repeated to ensure all stations heard and understood.⁸ The divisions that had been issued the new Multiple Subscriber Equipment (MSE) -- replacing the pulse code modulated (PCM) multi-channel equipment -- were very happy with it and the divisions that did not have it were screaming for it.⁹ The newer tactical FM Single Channel Ground-Air Radio System (SINCGARS) was also "desperately" required in those divisions that had not been issued it.¹⁰

Under command and control processes, clear articulation in passing orders and the commander's intent were stressed. Face-to-face discussions with the subordinate commanders, with open dialogue and brief-backs on intent and synchronization, were considered critical.¹¹ Division commanders also felt that it was important that the division staff complete its planning far enough in advance to give brigade and battalion commanders time to plan their unit's actions to fit the division's intent and concept of the operations. There was near unanimity among the division commanders on designing their own CPs and TOCs, and on using the layout and procedures with which that felt most comfortable. Attempts by the Training and Doctrine Command (TRADOC) to standardize CP and TOC layouts and procedures across the Army were considered a waste of time.¹²

Commanders felt they had to be at the decisive point on the battlefield at the decisive time. Several key reasons were given. One was that the commander had to personally see what was happening and to get the "feel" of the battlefield. Another, that the division commander could focus and synchronize the support to the subordinate commander more quickly from the decisive point. Finally, they did not trust the communications system to get them the information they required quickly and clearly enough.¹³

One recent division commander felt that his division signal battalion commander was the most important battalion commander in the division. He felt that the division signal officer had to be in on all operations planning from the beginning to ensure that the division's communications assets could support the concept of operations and the C2 needed to carry it out. He stated that SINCGARS was the solution to many of the tactical FM radio problems experienced in the past. In his view, HF AM radio communications were not reliable for two reasons. One was the lack of training on operation and maintenance by all users. Second was HF AM's inability to transmit secure voice traffic.¹⁴

RELATED C3 LESSONS LEARNED

Grenada, Panama, the NTC, and some early returns from Desert Storm suggest additional and confirmatory lessons on C3 operations.

In Desert Storm, during division movement to contact, the division TOC needed to be right up behind the brigades' march elements in order to maintain communications with the division's lead elements. The division main CP had to be close enough behind the TOC to provide SINGARS, MSE, and radio-teletype capabilities. Communications between the trailing forward support battalions (FSBs) and the supported brigades, and between the trailing DISCOM and the FSBs and the Division Main CP got to be very tenuous due to the slower movement of the support and logistics vehicles.¹⁵ This meant that the brigades, in the faster moving and more far-flung divisions, had to send people back to establish contact with the FSBs and guide them to where they were needed in order to get their fuel and munitions.

Another lesson learned by division operations personnel was a need to train all G-3 and G-2 key personnel on communications capabilities and limitations. It was pointed out that many key operations and intelligence personnel do not know how to use their own communications equipment, how to utilize the capabilities of their secure gear, and how to control the types of information being passed on their communications nets. Often,

subordinate commanders found themselves having to talk to key division staff personnel through radio operators who had to find the staff officer to answer their questions. When the radio operator returned to the radio to give the answer, further questions sent them scurrying off to find the staff officer again. Key personnel had to know how to use and be able to man the communications equipment at decisive points in time. They also had to know how long it took to break down their CP and supporting communications, and how long it took to reestablish all aspects of their C3. These C3 outages had to be planned for.¹⁶

The Combined Arms Training Activity (CATA), a subordinate to CACDA, has published a NTC lessons learned series that focuses on battalion and brigade deficiencies. However, there are many common C3 lessons and they confirm many of the division commanders' experiences. Especially noted were lessons dealing with not understanding completely the commander's intent resulting in a breakdown in the unity of effort. Also, a lack of a planned succession of command and an inability to report actions clearly in the fog of war were key problems that could be related to the division level. Some of the breakdowns in executing the intent were caused by differences in definitions of terms, such as "overwatch", "assault" and "suppress". These definitions should have been ironed out in the brief-backs from the subordinate commanders on the commander's intent and concept of the operation. CATA strongly recommended that artillery and

aviation support be wargamed with artillery and aviation commanders once the fire support plan was developed. This practice cut down on confusion at the time of execution and made the fires proactive rather than reactive. Wargaming also allowed the aviation and artillery commanders to consider ammunition constraints, positioning considerations, and plan on C3 redundancy at key points. CPs and TOCs must be positioned to effectively communicate with Corps and the deployed brigades. The CPs must be in position and set to operate during critical times, such as during reconnaissance prior to operations, at start times for offensive operations, and at times of expected enemy contact. Communications equipment problems paralleled those experienced by the division commanders in terms of secure equipment usage, the age and unreliability of the AN/VRC-12 radios, and the lack of use of HF equipment.¹⁷

In Grenada, during Operation Urgent Fury, there were many problems dealing with communications interoperability between the Army and the Marines and supporting naval and air fire support. Also identified were problems with compatible keying material for the secure equipment on secure radio nets and differences in call for fire procedures between the Army and supporting naval gunfire.¹⁸ These problems have since led to tighter controls on procurement of new C3 systems by each service. Congress has required the meeting of minimum joint interoperability standards for C3 systems. Grenada's lessons have led to a new appreciation for working out C3 requirements early in Joint operations.

CONCLUSIONS AND CURRENT ACTIONS

Command and Control

Lessons in the command and control process can be summed up in three basic tenets. These tenets relate to unity, chain of command, and autonomy.

First, there must always be unity and this unity must be pervasive. Unity of command must be there to ensure everyone knows who is in charge. Unity of effort is necessary to ensure all components of the force focus on the same objective. Unity of operations ensures priorities are established in the operations concept to keep the forces from being distracted from their principle goals.

Second, there needs to be a short, simple chain of command. Key individuals need to be identified sequentially as successors in command, should something happen to the commander. This identification aids in the maintaining of unity and keeps the focus on the goals of the battle.

Lastly, field commanders must have tactical autonomy to work within the intent of the mission and stated restrictions. They should know clearly what ends to accomplish. Within given boundaries and resources (means), they should have the latitude on how (ways) to accomplish the mission. If the mission is so very important and the present commander does not enjoy the full confidence of his superiors to accomplish the mission, then he

should be replaced with someone who does have that confidence.

C3 Training

The Army needs to spend more training time on stressing C3 under conditions close to actual wartime. These conditions would include loss of communications nodes, communications jamming, faulty (fog of war) reporting, and the loss of the commander or key command post. Most Divisions and Corps do not practice operations under these conditions. They feel that C3 is usually precarious enough, in the best of times, to deliberately add to the difficulty of the exercises. Even so, only practice and exposure to deliberate electronic warfare countermeasures will increase operator effectiveness and efficiency in the face of these problems. Currently only battalion and brigade units are getting exposed to deliberate EW. The C3 processes at that level are not as complicated nor as critical as those at Division level.

Communications

Communications solutions are more varied and technical. The Army is slowly procuring some long-term solutions to long standing problems.

The SINCGARS family of tactical radios is finally making its way into Corps and Divisional inventories after first being introduced in the Army in 1975. It is taking the place of the AN/VRC-12 family of radios. It offers an immensely better mean time between failure than its venerable predecessor and has anti-

jam capabilities never before fielded. SINCGARS has been a long time coming.

VINSON secure voice encryption equipment has replaced the NESTOR family. VINSON is more reliable and far easier to operate and maintain. Its ability to execute over-the-airways rekeying of the radio network's encryption matrix cuts down on keying material handling and compatibility.

The Army is procuring, in small quantities, high frequency radios with an anti-jamming capability (HFAJ) that has not been issued to ground combat units. This equipment is more user-friendly in operation, and offers better EW and direction-finding protection than presently-fielded, 1960's-technology, equipment. The Army must obtain improved HF communications equipment as a back-up to presently-fielded satellite communications systems. There are areas of the world not adequately covered by satellite communications and satellites are no longer invulnerable to a sophisticated adversary. Present HF equipment needs to be replaced with a system capable of automatic link establishment, high data rates, secure voice, easier-to-erect antenna systems, and more reliable power amplifiers.

The next generation of Army communications equipment must take advantage of current technology and be fielded much quicker than SINCGARS, VINSON, and HFAJ. The Army must buy equipment in coordination with the other services to ensure equipment interoperability and standardized data interfaces. Cooperative procurement will ensure cheaper bulk buying, maximize equipment

utility and availability, and greatly increase planning flexibility in joint operations. User-friendly equipment is a must because, in a downsized Army, as there will be fewer signal technicians available to operate equipment, especially at brigade and battalion levels. The user must be the installer, operator, and first-level maintainer. The equipment should make the most of miniaturization to reduce power requirements, weight, and size.

The Army can make great strides in improving the EW vulnerabilities of C3 systems. Antenna systems can be made more directional. More use can be made of frequency-hopping and spread-spectrum technologies to hide radio transmissions -- thus, making jamming and radio direction finding much more difficult and the results less exact. However, consideration for use must balance the capabilities to be gained against the cost, the threat, the complexity of operation and maintenance, and interoperability with joint and allied forces.

Special Operations Forces (SOF) and reconnaissance units need a more reliable, multi-mode, low-probability-of-intercept communications system. Present burst transmission systems offer few real-time information-exchange capabilities. SOF also needs better-transportable high-gain antennas.

All communications nodes at Corps and lower levels desperately need improved electrical power supplies that greatly reduce size, weight, noise and heat signatures, as well as the amount of maintenance effort required. This capability can be

purchased off the shelf now.

The Army has several distributed data command and control and logistics systems under development. The Army must ensure that the other services are brought into the developmental process. Cooperation is necessary to standardize hardware and software protocols and interfaces. Further, joint development will improve interoperability of information, and enhance data base sharing, redundancy and survivability. The joint standardization process must include a military standard for fiber optics and packet data-transmission and switching systems. Standards for all aspects of data distribution systems for C2 and logistics will greatly improve transmission link efficiency and interoperability.

In past conflicts, American command, control, and communications capabilities have been good enough to win. In Korea and Vietnam C3 was fragile; and, in some localized cases, it was a disaster. In Grenada C3 was not well planned and there were numerous interoperability problems between the services. In Panama C3 was better due to a fixed plant communications network already in place. However, when forces had to maneuver over long distances and got away from the fixed communications, C3 was maintained on one tenuous satellite link for some units. In Desert Shield and Desert Storm, most units had received SINCGARS and VINSON equipment and had the time to plan for additional robustness of their C3 networks. In every case, the American C3 systems were, fortunately, much better than their enemy's.

There may come a time, however, when the adversary's C3 is as good as or even better than the American forces' systems. It is time for the Pentagon to invest in newer C3 equipment and work to shorten the procurement cycles. The technology envelope for C3 does not need to be pushed: Present, no-risk technology is already available that can provide great leaps in capability over present equipment. All that is needed is to match current requirements with available solutions and quickly acquire it.

Rapid acquisition is needed. In the rush to acquire new tanks and infantry vehicles, the Army has spread its C3 acquisitions over lengthy time periods. This stretching causes the fielded technology to be 20 years old before it reaches those who need it. It also drives up the per-unit cost of the equipment due to the small numbers purchased each year.

The U.S. Army's ability to command, control, and communicate better than its enemy has always been its best force-multiplier. It has given the Army early warning of the enemy's intent, allowed for action inside of the enemy's ability to react, and provided the ability to establish the initiative, maneuver and focus combat power at a decisive point. This ability has saved countless battles and American lives. It cannot be allowed to deteriorate.

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